DETAILED ACTION

Response to Amendment

1. The objection to claim 1 has been withdrawn in view of the amendments received 3/15/2010.

2. The objections to claims 6 and 11 have been withdrawn in view of the amendments received 3/15/2010.

3. The 35 USC 101 rejections of claims 25-26 have been withdrawn in view of the amendments received 3/15/2010.

EXAMINER'S AMENDMENT

4. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mark Bergner on 5/11/2010.

Amend the application as follows:

5. Delete previous claim 1 and replace with

-A method for operating a coding apparatus comprising at least a first coder and a second coder that are interconnected, a processor unit, and a processor unit memory, comprising:

providing a multiple compression coding via a plurality of coding techniques by the interconnected first coder and second coder;

feeding a common input signal in parallel to at least the first and second coder, each coder comprising a succession of functional units for compression coding of said input signal by each of the first and second coders, the first and second coders respectively comprising at least a first and a second shared functional unit for performing common operations;

calculating, by at least a part of the functional units with the processor unit, respective parameters for coding of the input signal by each coder;

performing calculations for delivering, across a coder interconnection, a same set of parameters to the first functional unit and to the second functional unit in a same step and in a shared functional unit for processing of the common input signal by the coders;

if at least one of the first and the second coder operates at a rate that is different from a rate of a common functional unit, adapting the parameters to the respective rate of at least one respective said first coder and said second coder in order to be used by the at least one of said first and second functional unit respectively; and

if the first and the second coders operate at a rate that is the same as a rate of the common functional unit, then providing the parameters to the first and second functional units without adaptation.-

6. As per claim 20, lines 1-2, delete "wherein the coders effect subband and the method further includes steps common to all the coders including:" and replace with -wherein the coders affect sub-band coding and the method further includes steps common to all the coders including:-

7. Delete previous claim 24 and replace with

-A non-transitory computer program product, comprising:

a computer readable medium storing a computer program product in memory, said computer readable medium including instructions for implementing a multiple compression coding method for operating a coding apparatus comprising at least a first coder and a second coder that are interconnected, and that both utilize a plurality of coding techniques, the apparatus being fed with a common input signal, said common input signal being inputted in parallel to at least the first and second interconnected coders, each of the first and second coders comprising a succession of functional units, for compression coding of the common input signal by each of the first and second coders,

at least a part of said functional units performing calculations for delivering, across a coder interconnection, respective parameters for the coding of the input signal by each coder,

the first and second coders respectively comprising at least a first and a second shared functional unit arranged for performing common operations,

wherein

calculations for delivering a same set of parameters to the first functional unit and to the second functional unit are performed in a same step and in a shared functional unit for processing of the common input signal by the coders,

if at least one of the first and the second coder operates at a rate which is different from the rate of said common functional unit, the parameters are adapted to the rate of the respective at least one of the first and second coder in order to be used by the at least one of the respective first and second functional unit; and

if the first and the second coders operate at a rate that is the same as a rate of the common functional unit, then the parameters are provided to the first and second functional units without adaptation.-

8. Delete previous claim 25 and replace with

-A system for assisting multiple compression coding, comprising:

a multiple compression coding apparatus comprising:

at least a first coder and a second coder that are interconnected, the apparatus being fed with a common input signal, said common input signal being inputted in parallel to at least the interconnected first and the second coders, each of the first and second coders comprising a succession of functional units, for compression coding via a plurality of coding techniques of the common input signal by each of the interconnected first

and second coders,

at least a part of said functional units performing calculations for delivering, across a coder interconnection, respective parameters for the coding of the common input signal by each interconnected coder,

the first and second coders respectively comprising at least a first and a second shared functional unit arranged for performing common operations, and

a memory storing instructions for implementing by a processor unit a method for operating the system,

wherein

calculations for delivering a same set of parameters to the first functional unit and to the second functional unit are performed in a same step and in a shared functional unit for processing of the common input signal by the coders, and

if at least one of the first and the second coder operates at a rate which is different from the rate of said common functional unit, the parameters are adapted to the rate of the respective at least one of the first and second coder in order to be used by the respective at least one of the first and second functional unit, respectively; and

if the first and the second coders operate at a rate that is the same as a rate of the common functional unit, then the parameters are provided to the first and second functional units without adaptation.-

9. Delete previous claim 27 and replace with

-A multiple compression coding method, comprising:

providing a multiple compression coding via a plurality of coding techniques by a plurality of coders comprising at least a first coder and a second coder that are interconnected;

feeding a common input signal in parallel to an apparatus comprising the plurality of coders, each including a succession of functional units for compression coding of said signal by each coder, wherein each coder comprises a different combination of functional units;

identifying the functional units forming each coder and one or more functions implemented by each unit;

marking functions that are equivalent from one coder to another;

selecting a function executed by a given coder amongst the functions that are equivalent, and executing, via a processor unit, said functions with parameters provided across a coder interconnection related to the given coder only one time for the common input signal for at least some of the interconnected coders in a shared common calculation module;

adapting a result obtained from the execution of the function in the selecting and executing step for a use in at least a part of the plurality of coders; and

producing and feeding a coded output signal from the apparatus based at least in part on the common functions.-

10. Delete previous claim 29 and replace with

-A multiple compression coding method, comprising:

feeding a common input signal in parallel to an apparatus comprising a plurality of coders that are interconnected, each including a succession of functional units for compression coding of said common signal by each coder, wherein each coder comprises a different combination of functional units;

identifying the functional units forming each coder and one or more functions implemented by each unit;

marking functions that are common from one coder to another;

executing, via a processor unit, said common functions only one time for the common input signal for at least some of the coders in a shared common calculation module, based on parameters provided across a coder interconnection; and

producing and feeding a coded output signal from the apparatus based at least in part on the common functions;

wherein

said calculation module is independent of said coders and is adapted to redistribute results obtained in the executing step to all the coders; and

the independent module and the functional unit or units of at least one of the coders are adapted to exchange results obtained in the executing step with each other and the calculation module is adapted to affect adaptation

transcoding between functional units of different interconnected coders.-

REASONS FOR ALLOWANCE

11. Claims 1-29 are allowed. The following is an examiner's statement of reasons for allowance:

As per claim 1, the closest known prior art fails to teach or fairly suggest along or in reasonable combination the limitations of:

A method for operating a coding apparatus comprising at least a first coder and a second coder that are interconnected, a processor unit, and a processor unit memory, comprising:

providing a multiple compression coding via a plurality of coding techniques by the interconnected first coder and second coder;

feeding a common input signal in parallel to at least the first and second coder, each coder comprising a succession of functional units for compression coding of said input signal by each of the first and second coders, the first and second coders respectively comprising at least a first and a second shared functional unit for performing common operations;

calculating, by at least a part of the functional units with the processor unit, respective parameters for coding of the input signal by each coder;

performing calculations for delivering, across a coder interconnection, a same set

of parameters to the first functional unit and to the second functional unit in a same step and in a shared functional unit for processing of the common input signal by the coders;

if at least one of the first and the second coder operates at a rate that is different from a rate of a common functional unit, adapting the parameters to the respective rate of at least one respective said first coder and said second coder in order to be used by the at least one of said first and second functional unit respectively; and

if the first and the second coders operate at a rate that is the same as a rate of a common functional unit, then providing the parameters to the first and second functional units without adaptation.

Kolesnik provides a parallel multimodal coding scheme, but does not teach multiple compression coding because Kolesnik teaches that only one of the encoders is selected to operate at a time. (See Remarks 3/15/2010, Page 14, ¶ 2)

Jabri teaches shared generic parameters for CELP coders (Fig. 3) which can be provided to more than one coder. Jabri, however, fails to teach wherein the first and second coders comprise at least a first and second shared functional unit for performing common operations. Jabri teaches generic pre-processing but does not teach sharing of parameters across a coder interconnection in a same step and in a shared function unit for processing of a common input signal by the coders.

Seo provides rate adaptation between coders based on classification. Seo does not address "performing calculations for delivering, across a coder interconnection, a same set of parameters to the first functional unit and to the second functional unit in a same step and in a shared functional unit for processing of the common input signal by the coders."

Claims 2-23, and 28 depend on, and further limit independent claim 1 and are therefore considered allowable using the same rationale.

As per claim 24, the closest known prior art fails to teach or fairly suggest along or in reasonable combination the limitations of:

A non-transitory computer program product, comprising:

a computer readable medium storing a computer program product in memory,

said computer readable medium including instructions for implementing a multiple compression coding method for operating a coding apparatus comprising at least a first coder and a second coder that are interconnected, and that both utilize a plurality of coding techniques, the apparatus being fed with a common input signal, said common input signal being inputted in parallel to at least the first and second interconnected coders, each of the first and second coders comprising a succession of functional units, for compression coding of the common input signal by each of the first and second coders,

at least a part of said functional units performing calculations for delivering, across a coder interconnection, respective parameters for the coding of the input signal by each coder,

the first and second coders respectively comprising at least a first and a second shared functional unit arranged for performing common operations, wherein

calculations for delivering a same set of parameters to the first functional unit and to the second functional unit are performed in a same step and in a shared functional unit for processing of the common input signal by the coders,

if at least one of the first and the second coder operates at a rate which is different from the rate of said common functional unit, the parameters are adapted to the rate of the respective at least one of the first and second coder in order to be used by the at least one of the respective first and second functional unit; and

if the first and the second coders operate at a rate that is the same as a rate of a common functional unit, then the parameters are provided to the first and second functional units without adaptation.

Kolesnik provides a parallel multimodal coding scheme, but does not teach multiple compression coding because Kolesnik teaches that only one of the encoders is selected to operate at a time. (See Remarks 3/15/2010, Page 14, ¶ 2)

Jabri teaches shared generic parameters for CELP coders (Fig. 3) which can be provided to more than one coder. Jabri, however, fails to teach wherein the first and second coders comprise at least a first and second shared functional unit for performing common operations. Jabri teaches generic pre-processing but does not teach sharing of parameters across a coder interconnection in a same step and in a shared function unit for processing of a common input signal by the coders.

Seo provides rate adaptation between coders based on classification. Seo does not address "calculations for delivering a same set of parameters to the first functional unit and to the second functional unit are performed in a same step and in a shared functional unit for processing of the common input signal by the coders".

As per claim 25, the closest known prior art fails to teach or fairly suggest along or in reasonable combination the limitations of:

A system for assisting multiple compression coding, comprising:

a multiple compression coding apparatus comprising:

at least a first coder and a second coder that are interconnected, the apparatus being fed with a common input signal, said common input signal being inputted in parallel to at least the interconnected first and the second coders, each of the first and second coders comprising a succession of functional units, for compression coding via a plurality of coding techniques of the common input signal by each of the interconnected first and second coders,

at least a part of said functional units performing calculations for delivering, across a coder interconnection, respective parameters for the coding of the common input signal by each interconnected coder,

the first and second coders respectively comprising at least a first and a second shared functional unit arranged for performing common operations, and

a memory storing instructions for implementing by a processor unit a method for operating the system,

wherein

calculations for delivering a same set of parameters to the first functional unit and to the second functional unit are performed in a same step and in a shared functional unit for processing of the common input signal by the coders, and

if at least one of the first and the second coder operates at a rate which is different from the rate of said common functional unit, the parameters are adapted to the rate of the respective at least one of the first and second coder in order to be used by the respective at least one of the first and second functional unit, respectively; and

if the first and the second coders operate at a rate that is the same as a rate of a common functional unit, then the parameters are provided to the first and second functional units without adaptation.

Kolesnik provides a parallel multimodal coding scheme, but does not teach

multiple compression coding because Kolesnik teaches that only one of the encoders is selected to operate at a time. (See Remarks 3/15/2010, Page 14, ¶ 2)

Jabri teaches shared generic parameters for CELP coders (Fig. 3) which can be provided to more than one coder. Jabri, however, fails to teach wherein the first and second coders comprise at least a first and second shared functional unit for performing common operations. Jabri teaches generic pre-processing but does not teach sharing of parameters across a coder interconnection in a same step and in a shared function unit for processing of a common input signal by the coders.

Seo provides rate adaptation between coders based on classification. Seo does not address "calculations for delivering a same set of parameters to the first functional unit and to the second functional unit are performed in a same step and in a shared functional unit for processing of the common input signal by the coders".

Claim 26 depends on, and further limits independent claim 25 and is therefore considered allowable using the same rationale.

As per claim 27, the closest known prior art fails to teach or fairly suggest along or in reasonable combination the limitations of:

A multiple compression coding method, comprising:

providing a multiple compression coding via a plurality of coding techniques by a plurality of coders comprising at least a first coder and a second coder that are interconnected;

feeding a common input signal in parallel to an apparatus comprising the plurality of coders, each including a succession of functional units for compression coding of said signal by each coder, wherein each coder comprises a different combination of functional units;

identifying the functional units forming each coder and one or more functions implemented by each unit;

marking functions that are equivalent from one coder to another;

selecting a function executed by a given coder amongst the functions that are equivalent, and executing, via a processor unit, said functions with parameters provided across a coder interconnection related to the given coder only one time for the common input signal for at least some of the interconnected coders in a shared common calculation module;

adapting a result obtained from the execution of the function in the selecting and executing step for a use in at least a part of the plurality of coders; and

producing and feeding a coded output signal from the apparatus based at least in part on the common functions.

Kolesnik provides a parallel multimodal coding scheme, but does not teach multiple compression coding because Kolesnik teaches that only one of the encoders is selected to operate at a time. (See Remarks 3/15/2010, Page 14, ¶ 2)

Jabri teaches shared generic parameters for CELP coders (Fig. 3) which can be provided to more than one coder using generic pre-processing. Jabri, however, fails to

teach wherein the plurality of coders each comprise a succession of functional units and selecting a function executed by a given coder amongst the functions that are equivalent to execute said functions with parameters provided across a coder interconnection related to the given coder only one time for the common input signal for at least some of the interconnected coders in a shared common calculation module.

Seo provides rate adaptation between coders based on classification. Seo does not address "selecting a function executed by a given coder amongst the functions that are equivalent, and executing, via a processor unit, said functions with parameters provided across a coder interconnection related to the given coder only one time for the common input signal for at least some of the interconnected coders in a shared common calculation module".

As per claim 29, the closest known prior art fails to teach or fairly suggest along or in reasonable combination the limitations of:

A multiple compression coding method, comprising:

feeding a common input signal in parallel to an apparatus comprising a plurality of coders that are interconnected, each including a succession of functional units for compression coding of said common signal by each coder, wherein each coder comprises a different combination of functional units;

identifying the functional units forming each coder and one or more functions implemented by each unit;

marking functions that are common from one coder to another;

executing, via a processor unit, said common functions only one time for the common input signal for at least some of the coders in a shared common calculation module, based on parameters provided across a coder interconnection; and

producing and feeding a coded output signal from the apparatus based at least in part on the common functions;

wherein

said calculation module is independent of said coders and is adapted to redistribute results obtained in the executing step to all the coders; and

the independent module and the functional unit or units of at least one of the coders are adapted to exchange results obtained in the executing step with each other and the calculation module is adapted to effect adaptation transcoding between functional units of different interconnected coders.

Kolesnik provides a parallel multimodal coding scheme, but does not teach multiple compression coding because Kolesnik teaches that only one of the encoders is selected to operate at a time. (See Remarks 3/15/2010, Page 14, ¶ 2)

Jabri teaches shared generic parameters for CELP coders (Fig. 3) which can be provided to more than one coder using generic pre-processing. Jabri, however, fails to teach wherein the plurality of coders that are interconnected, each comprise a succession of functional units and selecting a function executed by a given coder

amongst the functions that are equivalent to execute said common functions only one time for the common input signal for at least some of the coders in a shared common calculation module, based on parameters provided across a coder interconnection.

Seo provides rate adaptation between coders based on classification. Seo does not address "executing, via a processor unit, said common functions only one time for the common input signal for at least some of the coders in a shared common calculation module, based on parameters provided across a coder interconnection".

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Refer to PTO-892, Notice of References Cited for a listing of analogous art.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREG A. BORSETTI whose telephone number is (571)270-3885. The examiner can normally be reached on Monday - Thursday (8am - 5pm Eastern Time).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, RICHEMOND DORVIL can be reached on 571-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Greg A. Borsetti/
Examiner, Art Unit 2626

/Talivaldis Ivars Smits/ 5/13/2010
Primary Examiner, Art Unit 2626